

ABSTRACT

Some embodiments of the invention provide an improved spectrometer that measures light emissions and/or reflection from a non-solid material that flows through a system of pipes. This spectrometer is designed to fit into a standard pipe system. The material flows past a distal end of the spectrometer that is inserted in the pipe system. The spectrometer has the ability to project light onto the material and collect a resulting light from the material through the distal end as the material flows past this end.